

REMARKS

Entry of the foregoing, reexamination and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.111 and in light of the remarks which follow, are respectfully requested.

By the above amendments, claims 6 and 7 have been canceled. Claims 1, 15 and 18 have been amended to delete the conditions (i) - (iii) and (v). As amended, claims 1, 15 and 18 now recite that "in the formula (1), two or more substituent groups represented by $-NR^{170}SO_2R^{171}$ are present in the dye, and R^{170} and R^{171} each represents independently a hydrogen atom, aliphatic group or aromatic group." Claims 1, 2, 15, 16, 18 and 19 have been amended for readability purposes by replacing the term "molecule" with "dye."

Claims 1, 15 and 18 have been amended for readability purposes by replacing the phrase "may be" with "are optionally." In addition, claims 2, 16 and 19 have been amended for readability by replacing the phrase "above in" with "with respect to." Further, claim 18 has been amended for readability by replacing the word "comprising" with "comprises." Claim 12 has been amended for readability by replacing the phrase "one of adding water to the organic solvent and adding the organic solvent into water" with "either adding water to the organic solvent or adding the organic solvent into water."

New claim 21 is directed to the ink for an ink jet according to claim 1, wherein R^8 represents a substituted aryl group. New claim 22 is directed to the coloring composition according to claim 15, wherein R^8 represents a substituted aryl group. New claim 23 is directed to the ink jet recording method according to claim 18, wherein R^8 represents a substituted aryl

group. Support for new claims 21-23 can be found in the instant specification at least at the paragraph bridging pages 12 and 13.

Turning to the Official Action, claims 1-20 stand rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth at pages 2 and 3 of the Official Action. In response thereto, claims 1, 2, 15, 16, 18 and 19 have been amended to replace the term "molecule" with "dye." Thus, with respect to claims 1, 15 and 18, such amendments clarify that two or more substituent groups represented by $\text{-NR}^{170}\text{SO}_2\text{R}^{171}$ are present in the oil-soluble dye represented by the formula (1). Furthermore, claim 12 has been amended to recite the phrase "either adding water to the organic solvent or adding the organic solvent into water," as suggested by the Examiner. For at least the above reasons, withdrawal of the §112, second paragraph, rejection is respectfully requested.

The Official Action at page 3 states that "Claims 1, 3-6, 8, 10, 11, 13-15, 7-18 [*sic*] and 20" stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,313,196 (*Helling et al*). Withdrawal of this rejection is respectfully requested for at least the following reasons.

According to one aspect of the present invention as defined by amended claim 1, an ink for an ink jet is provided. The ink comprises a coloring composition comprising: (a) a dispersion medium; and (b) coloring particulates. The coloring particulates comprise (b-1) a polymer which is selected from the group consisting of polyurethanes, polyesters, polyamides, polyureas and polycarbonates; and (b-2) an oil-soluble dye represented by the formula (1) recited in claim 1. In the formula (1), two or more substituent groups represented by $\text{-NR}^{170}\text{SO}_2\text{R}^{171}$ are present in the dye, and R^{170} and R^{171} each represents independently a hydrogen atom, aliphatic group or

aromatic group. Other aspects of the present invention are directed to, for example, a coloring composition (claim 15) and an ink jet recording method (claim 18).

Advantageously, the combined use of the polymer and oil-soluble dye of formula (1) in accordance with the present invention can provide an ink for an ink jet with improved color tone, dependence on paper, water resistance, light resistance and stability characteristics (specification at page 82).

Helling et al relates to an ink for the production of ink jet images, which are sprayed in a fine imagewise modulated jet onto a suitable recording material (*Helling et al* at col. 1, lines 3-5).

Helling et al does not disclose or suggest each feature of aspects of the present invention as defined by claims 1, 15 and 18. For example, *Helling et al* does not disclose or suggest the oil-soluble dye represented by formula (1), wherein two or more substituent groups represented by $-NR^{170}SO_2R^{171}$ are present in the dye, and R^{170} and R^{171} each represents independently a hydrogen atom, aliphatic group or aromatic group, as recited in claims 1, 15 and 18. At page 3 of the Official Action, the Patent Office has relied on *Helling et al* for disclosing a dye "which is identical to the dye presently claimed when A is $NR^4R^5 \dots$ " However, the conditions (i)-(iii) and (v) formerly recited in claims 1, 15 and 18 have been deleted. Moreover, each of the dyes disclosed at columns 9-18 of *Helling et al* fails to correspond to the claimed formula (1) dye, wherein two or more substituent groups represented by $-NR^{170}SO_2R^{171}$ are present in the dye, and R^{170} and R^{171} each represents independently a hydrogen atom, aliphatic group or aromatic group.

For at least the above reasons, *Helling et al* does not anticipate the aspects of the present invention defined by claims 1, 15 and 18. Accordingly, withdrawal of this §102(e) rejection is respectfully requested.

Claims 1-3, 5, 6, and 8-20 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,025,412 (*Sacripante et al*) or U.S. Patent No. 6,031,019 (*Tsutsumi et al*), either of which in view of Japanese patent document No. 09-059552 (*JP '552*). Withdrawal of this rejection is respectfully requested for at least the following reasons.

The Patent Office has relied on *Sacripante et al* for disclosing, *inter alia*, "an aqueous ink jet ink and method of ink jet printing" (Official Action at page 5). Similarly, *Tsutsumi et al* has been relied upon for disclosing, *inter alia*, "a water-based ink jet ink and method of ink jet printing" (Official Action at page 6). However, as noted in the Official Action at page 6, neither *Sacripante et al* nor *Tsutsumi et al* discloses or suggests the oil-soluble dye of the formula (1) recited in claims 1, 15 and 18.

JP '552 fails to cure the above-described deficiencies of *Sacripante et al* and *Tsutsumi et al*. In this regard, the Official Action at page 7 states that *JP '552* discloses dyes which satisfy the conditions (i), (iii) and (v) formerly recited in the claims. However, the conditions (i), (iii) and (v) have been deleted from claims 1, 15 and 18. Moreover, *JP '552* does not appear to disclose or suggest the formula (1) dye, wherein two or more substituent groups represented by $-NR^{170}SO_2R^{171}$ are present in the dye, and R^{170} and R^{171} each represents independently a hydrogen atom, aliphatic group or aromatic group. In this regard, each of the compounds disclosed at pages 2, 4, 8-14 and 18 of *JP '552* does not contain two or more substituent groups represented by $-NR^{170}SO_2R^{171}$, wherein R^{170} and R^{171} each represents independently a hydrogen atom,

aliphatic group or aromatic group. Thus, it is apparent that *JP '552* neither discloses nor suggests the claimed formula (1) dye.

For at least the above reasons, it is apparent that no *prima facie* case of obviousness exists. Accordingly, withdrawal of this §103(a) rejection is respectfully requested.

Claims 1-20 stand rejected under 35 U.S.C. §103(a) as being obvious over *Sacripante et al* or *Tsutsumi et al*, either of which in view of Japanese patent document No. 03-231975 (*JP '975*). Withdrawal of this rejection is respectfully requested for at least the following reasons.

As discussed above, the Patent Office has relied on *Sacripante et al* for disclosing, *inter alia*, "an aqueous ink jet ink and method of ink jet printing." In addition, *Tsutsumi et al* has been relied upon for disclosing, *inter alia*, "a water-based ink jet ink and method of ink jet printing." However, as noted in the Official Action at page 9, neither *Sacripante et al* nor *Tsutsumi et al* discloses or suggests the oil-soluble dye of the formula (1) recited in claims 1, 15 and 18.

JP '975 fails to cure this deficiency of *Sacripante et al*, at least because *JP '975* and *Sacripante et al* are not properly combinable in the manner set forth in the Official Action. In this regard, *Sacripante et al* discloses that the dye thereof "is chemically attached to the emulsifiable polymer resin, as either a main chain constituent or a side chain constituent, rather than being separately mixed with a polymer resin" (*Sacripante et al* at col. 3, lines 42-45). *Sacripante et al* further discloses that to permit the dye to be chemically attached to the polymer resin, the dye contains two or more hydroxyl, diester or dicarboxylic acid components (*Sacripante et al* at col. 8, lines 15-24). In stark contrast, *JP '975* does not appear to disclose or suggest such a dye containing two or more hydroxyl, diester or dicarboxylic acid components which is compatible with the polymer disclosed by *Sacripante et al* to form a chemical

attachment therewith. As such, one of ordinary skill in the art would not have been motivated to modify *Sacripante et al* by substituting the dye thereof with the *JP '975* dye.

Moreover, *Sacripante et al* and *JP '975* appear to have no mention or suggestion that the *JP '975* dyes are capable of forming a chemical attachment with the polymer resin disclosed by *Sacripante et al*. And certainly, *Sacripante et al* and *JP '975* have no recognition or suggestion of the advantages of the combined use of a polymer and the formula (1) dye as recognized by the Applicants. Thus, it is clear that absent an improper resort to Applicants' own disclosure, one of ordinary skill in the art would not have been motivated to combine *Sacripante et al* with *JP '975* in the manner suggested in the Official Action.

Further, it is submitted that *JP '975* is not properly combinable with *Tsutsumi et al* in the manner set forth in the Official Action. As discussed above, *Tsutsumi et al* has no disclosure or suggestion of employing the claimed formula (1) dye in the aqueous ink thereof. Rather, *Tsutsumi et al* discloses that the colorant employed in the ink thereof is selected from oil-soluble dyes, disperse dyes, direct dyes, acid dyes and basic dyes, as well as pigments (*Tsutsumi et al* at col. 4, lines 20-22). In light of the above, and absent an improper resort to Applicants' own disclosure, one of ordinary skill in the art would not have been motivated to select the *JP '975* dye alleged to correspond to the inventive dye from the extensive list of dyes disclosed by *JP '975*, and employ same in the polymer emulsion of *Tsutsumi et al*, let alone with the expectation of obtaining the improved ink characteristics recognized by the Applicants.

Moreover, *JP '975* appears to have no mention or suggestion of the benefits of combining the dyes thereof with a polymer, nor the advantages associated therewith as recognized by Applicants. Therefore, for at least the above reasons, one of ordinary skill in the art would not

have been motivated to combine *Tsutsumi et al* with *JP '975* in the manner suggested in the Official Action.

Furthermore, Applicants submit that the ink according to the present invention provides surprising and unexpected results not recognized or suggested by the applied art. In this regard, various characteristics of exemplary inks according to the present invention were compared with those characteristics of a comparative ink. Referring to Table 2 at page 82 of the specification, Examples 1-4 and 7-9 of the present invention employed dyes I-11, I-25, I-18, I-25, I-44, I-18 and I-51, respectively, which dyes correspond to the presently claimed formula (I) dye.¹ On the other hand, like the inks disclosed by *Sacripante et al* and *Tsutsumi et al*, the comparative ink was formed from a dye (the (H-1) dye at page 77 of the specification) and a polymer. As set forth in the specification at page 44, the polymer was formed from terephthalic acid, isophthalic acid, 5-sulfoisophthalic acid, ethylene glycol and neopentyl glycol (24/24/2/25/25). The synthesis of the exemplary and comparative inks is discussed in detail at pages 75-79 of the specification.

As can be seen from Table 2, each of Examples 1-4 and 7-9 exhibited good color tone, dependence on paper, water resistance, light resistance and stability characteristics. On the other hand, the comparative Example 1 exhibited poor color tone and dependence on paper characteristics. The light resistance and stability characteristics were also substantially inferior to those of Examples 1-4 and 7-9. Thus, the test results set forth in the specification establishes that the present invention provides surprising and unexpected advantages not recognized or suggested by the applied art.

¹The compounds of these exemplary inventive dyes are set forth in the specification at pages 21, 23, 25, 29 and 31.

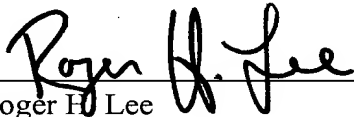
For at least the above reasons, withdrawal of this §103(a) rejection is respectfully requested.

It is noted that *Tsutsumi et al* is incorrectly cited as U.S. Patent No. 6,013,019 in the form PTO-892 issued on March 6, 2002. *Tsutsumi et al* is actually U.S. Patent No. 6,031,019. It is respectfully requested that a form PTO-892 be issued citing the correct patent document number of *Tsutsumi et al*.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

1. (Amended) An ink for an ink jet comprising a coloring composition comprising:

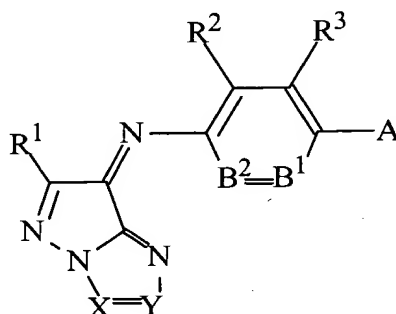
(a) a dispersion medium; and

(b) coloring particulates comprising:

(b-1) a polymer which is selected from the group consisting of polyurethanes, polyesters, polyamides, polyureas and polycarbonates; and

(b-2) an oil-soluble dye represented by formula (1):

Formula (1)



wherein R¹ represents a hydrogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, -OR¹¹, -SR¹², -CO₂R¹³, -OCOR¹⁴, -NR¹⁵R¹⁶, -CONR¹⁷R¹⁸, -SO₂R¹⁹, SO₂NR²⁰R²¹, -NR²²CONR²³R²⁴, -NR²⁵CO₂R²⁶, -COR²⁷, -NR²⁸COR²⁹ or -NR³⁰SO₂R³¹, and R¹, R², R³, R⁴, R⁵, R¹⁶, R¹⁷, R¹⁸, R¹⁹, R²⁰, R²¹, R²², R²³, R²⁴, R²⁵, R²⁶, R²⁷, R²⁸, R²⁹, R³⁰ and R³¹ each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein A represents -NR⁴R⁵ or a hydroxyl group, and R⁴ and R⁵ each represents independently a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; wherein B¹ represents =C(R⁶)- or =N- and B²

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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

represents $-C(R^7)=$ or $-N=$; wherein R^2 , R^3 , R^6 and R^7 each represents independently a hydrogen atom, halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, $-OR^{51}$, $-SR^{52}$, $-CO_2R^{53}$, $-OCOR^{54}$, $-NR^{55}R^{56}$, $-CONR^{57}R^{58}$, $-SO_2R^{59}$, $-SO_2NR^{60}R^{61}$, $-NR^{62}CONR^{63}R^{64}$, $NR^{65}CO_2R^{66}$, $-COR^{67}$, $-NR^{68}COR^{69}$ or $-NR^{70}SO_2R^{71}$, and R^{51} , R^{52} , R^{53} , R^{54} , R^{55} , R^{56} , R^{57} , R^{58} , R^{59} , R^{60} , R^{61} , R^{62} , R^{63} , R^{64} , R^{65} , R^{66} , R^{67} , R^{68} , R^{69} , R^{70} and R^{71} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein R^2 and R^3 , R^3 and R^4 , R^4 and R^5 , R^5 and R^6 , or R^6 and R^7 [may be] are optionally mutually bound to form a ring; wherein X and Y each represents independently $C(R^8)=$ or $N=$, R^8 represents a hydrogen atom, aliphatic group or aromatic group, either X or Y shall represent $N=$, and X and Y shall not be simultaneously $-N=$; and wherein in the formula (1), [satisfies at least one of following (i) to (v):

(i) A represents $-NR^4R^5$, R^4 and R^5 each represents independently a C_{1-18} alkyl group having a substituent group, the substituent group is at least one member selected from the group consisting of a heterocyclic group, cyano, $-OR^{141}$, $-SR^{142}$, $-CO_2R^{143}$, $-OCOR^{144}$, $-NR^{145}R^{146}$, $-CONR^{147}R^{148}$, $-SO_2R^{149}$, $-SO_2NR^{150}R^{151}$, $-NR^{152}CONR^{153}R^{154}$, $-NR^{155}CO_2R^{156}$, $-COR^{157}$, $-NR^{158}COR^{159}$ and $-NR^{160}SO_2R^{161}$, and R^{141} , R^{142} , R^{143} , R^{144} , R^{145} , R^{146} , R^{147} , R^{148} , R^{149} , R^{150} , R^{151} , R^{152} , R^{153} , R^{154} , R^{155} , R^{156} , R^{157} , R^{158} , R^{159} , R^{160} and R^{161} each represents independently a hydrogen atom, aliphatic group or aromatic group;

(ii) R^2 represents a substituted alkyl group;

(ii)' R^7 represents a substituted alkyl group;

(iii) R^8 represents an aryl group having 2 or more substituent groups;

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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

(iv) Two] ~~two~~ or more substituent groups represented by $\text{-NR}^{170}\text{SO}_2\text{R}^{171}$ are present in the dye, [molecule,] and R^{170} and R^{171} each represents independently a hydrogen atom, aliphatic group or aromatic group[; and

(v) One or more carboxyl groups are present in the molecule].

2. (Amended) An ink for an ink jet according to claim 1, wherein the oil-soluble dye is at least one compound represented by any one of formulae (2-1) to (2-5):

Application No. 09/780,402
Attorney's Docket No. 003510-076

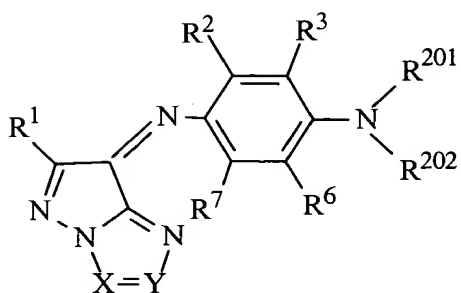
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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

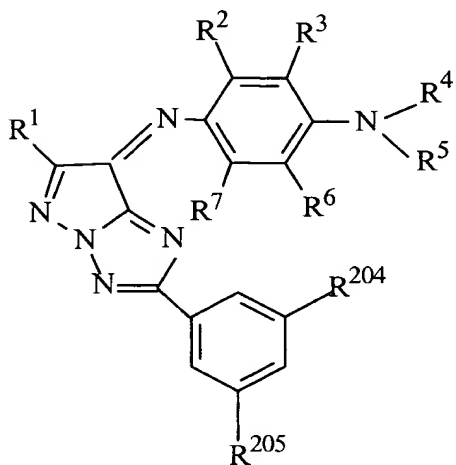
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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

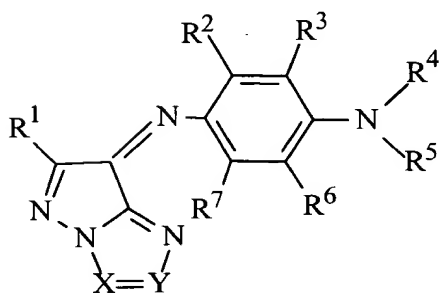
(2-1)



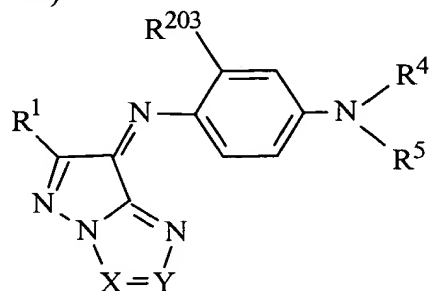
(2 - 3 a)



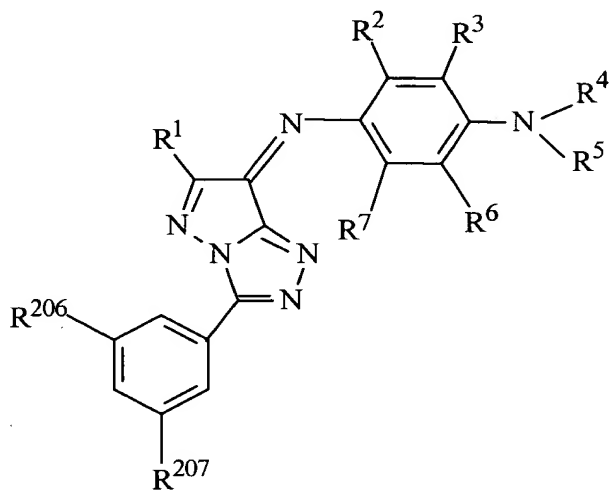
(2 - 4)



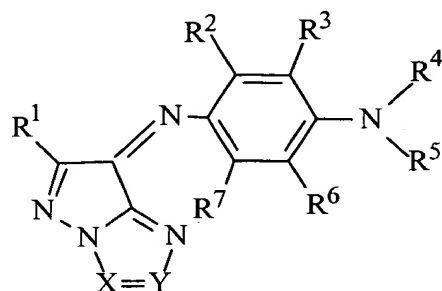
(2-2)



(2 - 3 b)



(2 - 5)



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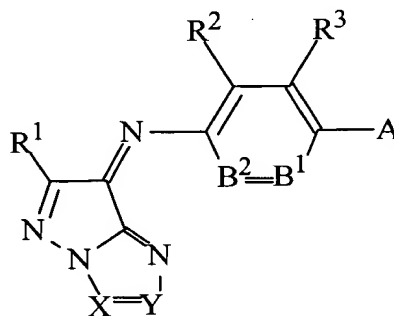
Marked-up claims 1, 2, 12, 15, 16, 18 and 19

wherein in the formulae (2-1) to (2-5) X, Y, R¹, R², R³, R⁴, R⁵, R⁶, R⁷ and R⁸ have the same meanings as defined [above in] with respect to the formula (1); wherein in the formula (2-1) R²⁰¹ and R²⁰² each represents a C₁₋₁₈ alkyl group having a substituent group, the substituent group is at least one member selected from the group consisting of a heterocyclic group, cyano, -OR¹⁴¹, -SR¹⁴², -CO₂R¹⁴³, -OCOR¹⁴⁴, -NR¹⁴⁵R¹⁴⁶, -CONR¹⁴⁷R¹⁴⁸, -SO₂R¹⁴⁹, -SO₂NR¹⁵⁰R¹⁵¹, -NR¹⁵²CONR¹⁵³R¹⁵⁴, -NR¹⁵⁵CO₂R¹⁵⁶, -COR¹⁵⁷, -NR¹⁵⁸COR¹⁵⁹ and -NR¹⁶⁰SO₂R¹⁶¹, and R¹⁴¹, R¹⁴², R¹⁴³, R¹⁴⁴, R¹⁴⁵, R¹⁴⁶, R¹⁴⁷, R¹⁴⁸, R¹⁴⁹, R¹⁵⁰, R¹⁵¹, R¹⁵², R¹⁵³, R¹⁵⁴, R¹⁵⁵, R¹⁵⁶, R¹⁵⁷, R¹⁵⁸, R¹⁵⁹, R¹⁶⁰ and R¹⁶¹ each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-2) R²⁰³ represents a C₁₋₁₀ substituted alkyl group; wherein in the formulae (2-3a) and (2-3b), R²⁰⁴, R²⁰⁵, R²⁰⁶ and R²⁰⁷ each represents independently a cyano or a group having no more than C₁₀₀ selected from the group consisting of an aliphatic group, aromatic group, heterocyclic group, -OR²¹¹, -SR²¹², -CO₂R²¹³, -OCOR²¹⁴, -NR²¹⁵R²¹⁶, -CONR²¹⁷R²¹⁸, -SO₂R²¹⁹, -SO₂NR²²⁰R²²¹, -NR²²²CONR²²³R²²⁴, -NR²²⁵CO₂R²²⁶, -COR²²⁷, -NR²²⁸COR²²⁹ and -NR²³⁰SO₂R²³¹, and R²¹¹, R²¹², R²¹³, R²¹⁴, R²¹⁵, R²¹⁶, R²¹⁷, R²¹⁸, R²¹⁹, R²²⁰, R²²¹, R²²², R²²³, R²²⁴, R²²⁵, R²²⁶, R²²⁷, R²²⁸, R²²⁹, R²³⁰ and R²³¹ each represent independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-4) at least one of R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R⁸ has substituent groups represented by -NR²⁷¹SO₂R²⁷², two or more substituent groups represented by -NR²⁷¹SO₂R²⁷² are contained in the dye, [molecule,] and R²⁷¹ and R²⁷² and each represents independently a hydrogen atom, aliphatic group or aromatic group; and wherein in the formula (2-5) at least one of R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R⁸ has one or more water-soluble groups.

12. (Amended) An ink for an ink jet according to claim 1, wherein the coloring particulates are obtained by emulsifying and making into fine particles an organic solvent which includes the polymer and the oil-soluble dye, by ~~either~~ [one of] adding water to the organic solvent, [and] ~~or~~ adding the organic solvent into water.

(b-1) a polymer which is selected from the group consisting of polyurethanes, polyesters, polyamides, polyureas and polycarbonates; and

Formula (1)



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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

$-\text{NR}^{22}\text{CONR}^{23}\text{R}^{24}$, $-\text{NR}^{25}\text{CO}_2\text{R}^{26}$, $-\text{COR}^{27}$, $-\text{NR}^{28}\text{COR}^{29}$, $-\text{NR}^{30}\text{SO}_2\text{R}^{31}$, and R^{11} , R^{12} , R^{13} , R^{14} , R^{15} , R^{16} , R^{17} , R^{18} , R^{19} , R^{20} , R^{21} , R^{22} , R^{23} , R^{24} , R^{25} , R^{26} , R^{27} , R^{28} , R^{29} , R^{30} and R^{31} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein A represents $-\text{NR}^4\text{R}^5$ or a hydroxyl group, and R^4 and R^5 each represents independently a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; wherein B^1 represents $=\text{C}(\text{R}^6)-$ or $=\text{N}-$ and B^2 represents $-\text{C}(\text{R}^7)=$ or $-\text{N}=$; wherein R^2 , R^3 , R^6 and R^7 each represents independently a hydrogen atom, halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, $-\text{OR}^{51}$, $-\text{SR}^{52}$, $-\text{CO}_2\text{R}^{53}$, $-\text{OCOR}^{54}$, $-\text{NR}^{55}\text{R}^{56}$, $-\text{CONR}^{57}\text{R}^{58}$, $-\text{SO}_2\text{R}^{59}$, $-\text{SO}_2\text{NR}^{60}\text{R}^{61}$, $-\text{NR}^{62}\text{CONR}^{63}\text{R}^{64}$, $-\text{NR}^{65}\text{CO}_2\text{R}^{66}$, $-\text{COR}^{67}$, $-\text{NR}^{68}\text{COR}^{69}$, $-\text{NR}^{70}\text{SO}_2\text{R}^{71}$, and R^{51} , R^{52} , R^{53} , R^{54} , R^{55} , R^{56} , R^{57} , R^{58} , R^{59} , R^{60} , R^{61} , R^{62} , R^{63} , R^{64} , R^{65} , R^{66} , R^{67} , R^{68} , R^{69} , R^{70} and R^{71} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein R^2 and R^3 , R^3 and R^4 , R^4 and R^5 , R^5 and R^6 , or R^6 and R^7 [may be] are optionally mutually bound to form a ring; wherein X and Y each represents independently $\text{C}(\text{R}^8)=$ or $\text{N}=$, R^8 represents a hydrogen atom, aliphatic group or aromatic group, either X or Y shall represent $\text{N}=$, and X and Y shall not be simultaneously $-\text{N}=$; and wherein in the formula (1), [satisfies at least one of the following (i) to (v):

(i) A represents $-\text{NR}^4\text{R}^5$, R^4 and R^5 each represents independently a C_{1-18} alkyl group having a substituent group, the substituent group is at least one member selected from group consisting of a heterocyclic group, cyano, $-\text{OR}^{141}$, $-\text{SR}^{142}$, $-\text{CO}_2\text{R}^{143}$, $-\text{OCOR}^{144}$, $-\text{NR}^{145}\text{R}^{146}$, $-\text{CONR}^{147}\text{R}^{148}$, $-\text{SO}_2\text{R}^{149}$, $-\text{SO}_2\text{NR}^{150}\text{R}^{151}$, $-\text{NR}^{152}\text{CONR}^{153}\text{R}^{154}$, $-\text{NR}^{155}\text{CO}_2\text{R}^{156}$, $-\text{COR}^{157}$, $\text{NR}^{158}\text{COR}^{159}$ and $-\text{NR}^{160}\text{SO}_2\text{R}^{161}$, and R^{141} , R^{142} , R^{143} , R^{144} , R^{145} , R^{146} , R^{147} , R^{148} , R^{149} , R^{150} , R^{151} ,

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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

R^{152} , R^{153} , R^{154} , R^{155} , R^{156} , R^{157} , R^{158} , R^{159} , R^{160} and R^{161} each represents independently a hydrogen atom, aliphatic group or aromatic group;

(ii) R^2 represents a substituted alkyl group;

(ii)' R^7 represents a substituted alkyl group;

(iii) R^8 represents an aryl group having 2 or more substituent groups;

(iv) Two] ~~two~~ or more substituent groups represented by $-NR^{170}SO_2R^{171}$ are present in the ~~dye~~, [molecule,] and R^{170} and R^{171} each represents independently a hydrogen atom, aliphatic group or aromatic group]; and

(v) One or more carboxyl groups are present in the molecule].

16. (Amended) A coloring composition according to claim 15, wherein the oil-soluble dye is at least one compound represented by any one of formulae (2-1) to (2-5):

Application No. 09/780,402
Attorney's Docket No. 003510-076

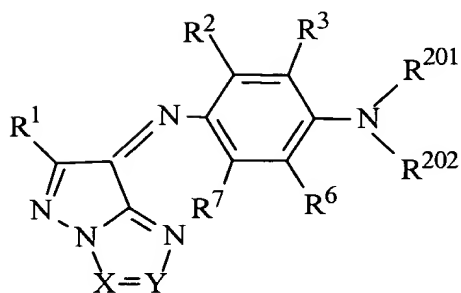
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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

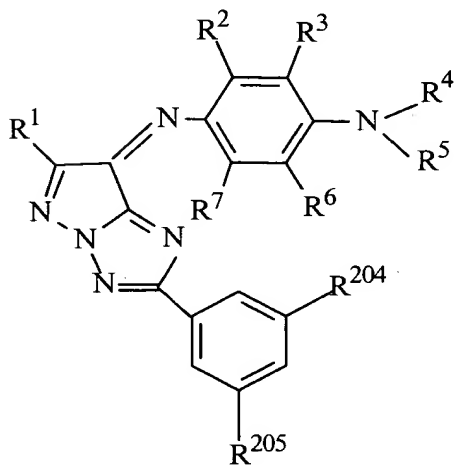
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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

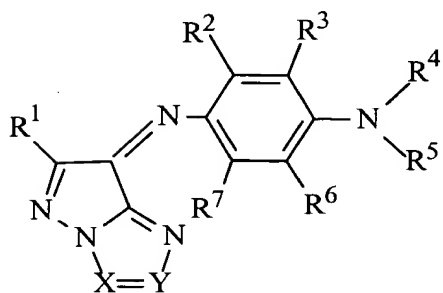
(2-1)



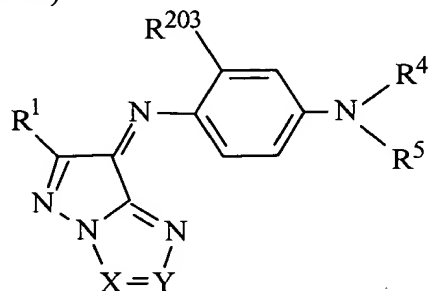
(2 - 3 a)



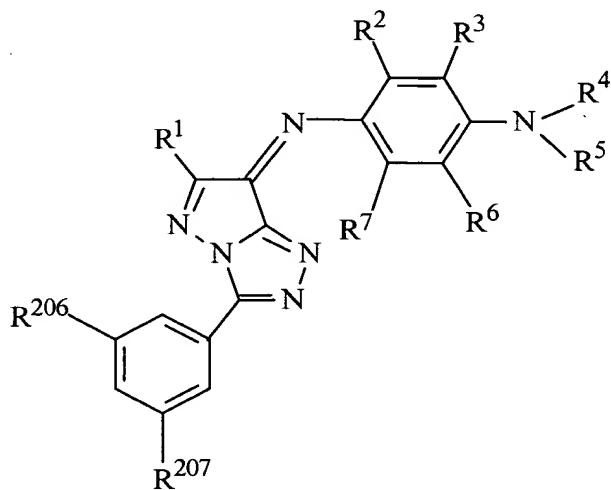
(2 - 4)



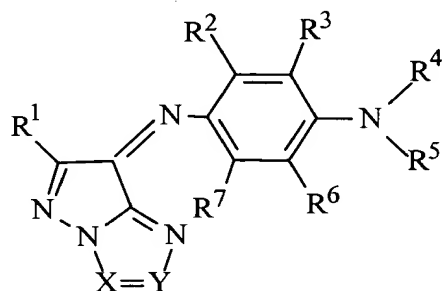
(2-2)



(2 - 3 b)



(2 - 5)



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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

wherein in the formulae (2-1) to (2-5) X, Y, R¹, R², R³, R⁴, R⁵, R⁶, R⁷ and R⁸ have the same meanings as defined [above in] with respect to the formula (1); wherein in the formula (2-1) R²⁰¹ and R²⁰² each represents a C₁₋₁₈ alkyl group having a substituent group, the substituent group is at least one member selected from group consisting of a heterocyclic group, cyano, -OR¹⁴¹, -SR¹⁴², -CO₂R¹⁴³, -OCOR¹⁴⁴, -NR¹⁴⁵R¹⁴⁶, -CONR¹⁴⁷R¹⁴⁸, -SO₂R¹⁴⁹, -SO₂NR¹⁵⁰R¹⁵¹, -NR¹⁵²CONR¹⁵³R¹⁵⁴, -NR¹⁵⁵CO₂R¹⁵⁶, -COR¹⁵⁷, -NR¹⁵⁸COR¹⁵⁹ and -NR¹⁶⁰SO₂R¹⁶¹, and R¹⁴¹, R¹⁴², R¹⁴³, R¹⁴⁴, R¹⁴⁵, R¹⁴⁶, R¹⁴⁷, R¹⁴⁸, R¹⁴⁹, R¹⁵⁰, R¹⁵¹, R¹⁵², R¹⁵³, R¹⁵⁴, R¹⁵⁵, R¹⁵⁶, R¹⁵⁷, R¹⁵⁸, R¹⁵⁹, R¹⁶⁰ and R¹⁶¹ each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-2) R²⁰³ represents a C₁₋₁₀ substituted alkyl group; wherein in the formulae (2-3a) and (2-3b), R²⁰⁴, R²⁰⁵, R²⁰⁶ and R²⁰⁷ each represents independently a cyano or a group having no more than C₁₀₀ selected from the group consisting of an aliphatic group, aromatic group, heterocyclic group, -OR²¹¹, -SR²¹², -CO₂R²¹³, -OCOR²¹⁴, -NR²¹⁵R²¹⁶, -CONR²¹⁷R²¹⁸, -SO₂R²¹⁹, -SO₂NR²²⁰R²²¹, -NR²²²CONR²²³R²²⁴, -NR²²⁵CO₂R²²⁶, -COR²²⁷, NR²²⁸COR²²⁹ and -NR²³⁰SO₂R²³¹, and R²¹¹, R²¹², R²¹³, R²¹⁴, R²¹⁵, R²¹⁶, R²¹⁷, R²¹⁸, R²¹⁹, R²²⁰, R²²¹, R²²², R²²³, R²²⁴, R²²⁵, R²²⁶, R²²⁷, R²²⁸, R²²⁹, R²³⁰ and R²³¹ each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-4) at least one of R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R⁸ has substituent groups represented by -NR²⁷¹SO₂R²⁷², two or more substituent groups represented by -NR²⁷¹SO₂R²⁷² are contained in the dye, [molecule,] and R²⁷¹ and R²⁷² each represents independently a hydrogen atom, aliphatic group or aromatic group; and wherein in the formula (2-5) at least one of R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R⁸ has one or more water-soluble groups.

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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

18. (Amended) An ink jet recording method comprising the steps of:

- (1) preparing an ink for an ink jet; and
- (2) using the ink for recording in an ink-jet printing device;

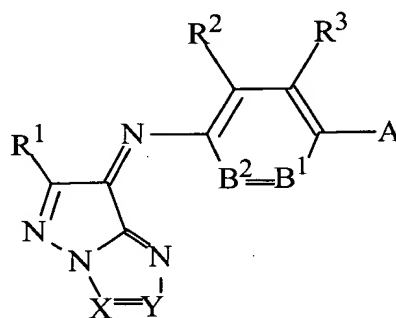
wherein the ink comprises [comprising] a coloring composition comprising:

- (a) a dispersion medium; and
- (b) coloring particulates comprising:

(b-1) a polymer which is selected from the group consisting of polyurethanes, polyesters, polyamides, polyureas and polycarbonates; and

(b-2) an oil-soluble dye represented by formula (1):

Formula (1)



wherein R¹ represents a hydrogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, -OR¹¹, -SR¹², -CO₂R¹³, -OCOR¹⁴, -NR¹⁵R¹⁶, -CONR¹⁷R¹⁸, -SO₂R¹⁹, -SO₂NR²⁰R²¹, -NR²²CONR²³R²⁴, -NR²⁵CO₂R²⁶ -COR²⁷, -NR²⁸COR²⁹ or -NR³⁰SO₂R³¹, and R¹, R², R³, R⁴, R⁵, R¹⁶, R¹⁷, R¹⁸, R¹⁹, R²⁰, R²¹, R²², R²³, R²⁴, R²⁵, R²⁶, R²⁷, R²⁸, R²⁹, R³⁰ and R³¹ each represents

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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

independently a hydrogen atom, aliphatic group or aromatic group; wherein A represents $-NR^4R^5$ or a hydroxyl group, and R^4 and R^5 each represents independently a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; wherein B^1 represents $=C(R^6)-$ or $=N-$ and B^2 represents $-C(R^7)=$ or $-N=$; wherein R^2 , R^3 , R^6 and R^7 each represents independently a hydrogen atom, halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano, $-OR^{51}$, $-SR^{52}$, $-CO_2R^{53}$, $-OCOR^{54}$, $-NR^{55}R^{56}$, $-CONR^{57}R^{58}$, $-SO_2R^{59}$, $-SO_2NR^{60}R^{61}$, $-NR^{62}CONR^{63}R^{64}$, $-NR^{65}CO_2R^{66}$, $-COR^{67}$, $-NR^{68}COR^{69}$ or $-NR^{70}SO_2R^{71}$, and R^{51} , R^{52} , R^{53} , R^{54} , R^{55} , R^{56} , R^{57} , R^{58} , R^{59} , R^{60} , R^{61} , R^{62} , R^{63} , R^{64} , R^{65} , R^{66} , R^{67} , R^{68} , R^{69} , R^{70} and R^{71} each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein R^2 and R^3 , R^3 and R^4 , R^4 and R^5 , R^5 and R^6 , or R^6 and R^7 [may be] are optionally mutually bound to form a ring; wherein X and Y each represents independently $C(R^8)=$ or $N=$, R^8 represents a hydrogen atom, aliphatic group or aromatic group, either X or Y shall represent $N=$, and X and Y shall not be simultaneously $-N=$; and wherein in the formula (1), [satisfies at least one of the following (i) to (v):

(i) A represents $-NR^4R^5$, R^4 and R^5 each represents independently a C_{1-18} alkyl group having a substituent group, the substituent group is at least one member selected from group consisting of a heterocyclic group, cyano, $-OR^{141}$, $-SR^{142}$, $-CO_2R^{143}$, $-OCOR^{144}$, $-NR^{145}R^{146}$, $-CONR^{147}R^{148}$, $-SO_2R^{149}$, $-SO_2NR^{150}R^{151}$, $-NR^{152}CONR^{153}R^{154}$, $-NR^{155}CO_2R^{156}$, $-COR^{157}$, $NR^{158}COR^{159}$ and $-NR^{160}SO_2R^{161}$, and R^{141} , R^{142} , R^{143} , R^{144} , R^{145} , R^{146} , R^{147} , R^{148} , R^{149} , R^{150} , R^{151} , R^{152} , R^{153} , R^{154} , R^{155} , R^{156} , R^{157} , R^{158} , R^{159} , R^{160} and R^{161} each represents independently a hydrogen atom, aliphatic group or aromatic group;

(ii) R^2 represents a substituted alkyl group;

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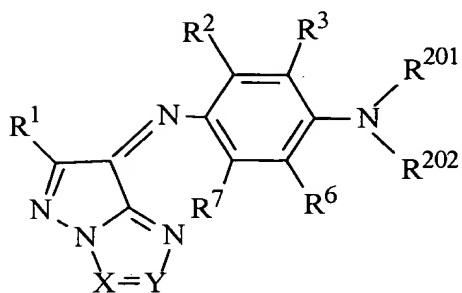
- (ii)' R⁷ represents a substituted alkyl group;
- (iii) R⁸ represents an aryl group having 2 or more substituent groups;
- (iv) Two] two or more substituent groups represented by -NR¹⁷⁰SO₂R¹⁷¹ are present in the dye, [molecule,] and R¹⁷⁰ and R¹⁷¹ each represents independently a hydrogen atom, aliphatic group or aromatic group[; and
- (v) One or more carboxyl groups are present in the molecule].

19. (Amended) An ink jet recording method according to claim 18, wherein the oil-soluble dye is at least one compound represented by any one of formulae (2-1) to (2-5):

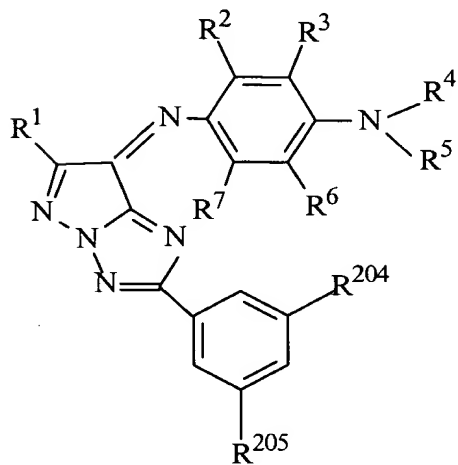
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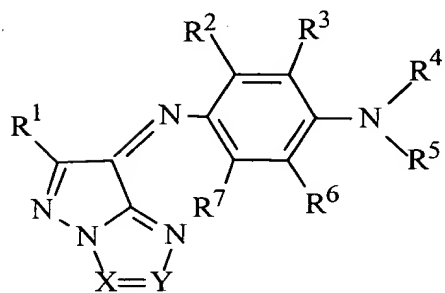
(2-1)



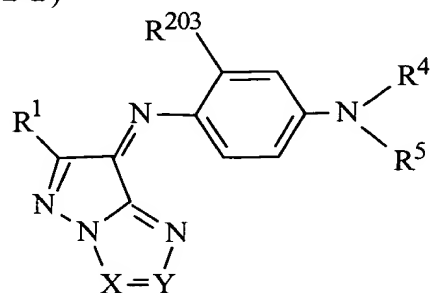
(2 - 3 a)



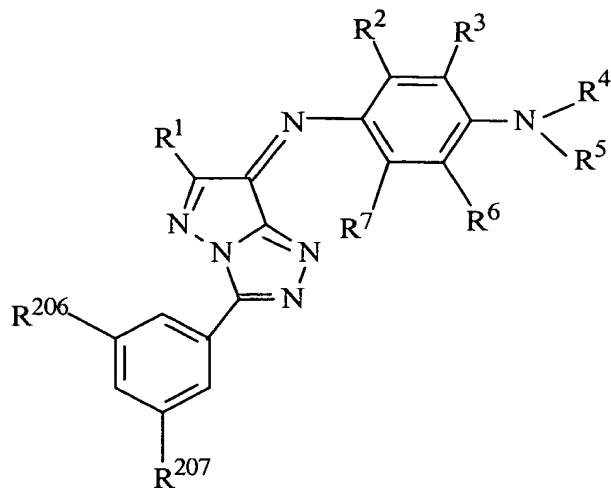
(2 - 4)



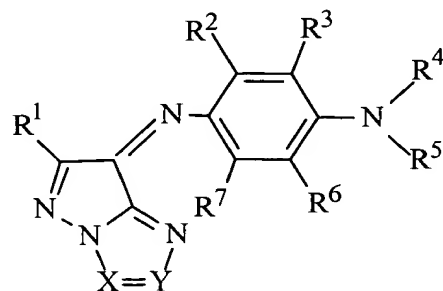
(2-2)



(2 - 3 b)



(2 - 5)



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Marked-up claims 1, 2, 12, 15, 16, 18 and 19

wherein in the formulae (2-1) to (2-5) X, Y, R¹, R², R³, R⁴, R⁵, R⁶, R⁷ and R⁸ have the same meanings as defined [above in] ~~with respect to~~ the formula (1); wherein in the formula (2-1) R²⁰¹ and R²⁰² each represents a C₁₋₁₈ alkyl group having a substituent group, the substituent group is at least one member selected from group consisting of a heterocyclic group, cyano, -OR¹⁴¹, -SR¹⁴², -CO₂R¹⁴³, -OCOR¹⁴⁴, -NR¹⁴⁵R¹⁴⁶, -CONR¹⁴⁷R¹⁴⁸, -SO₂R¹⁴⁹, -SO₂NR¹⁵⁰R¹⁵¹, -NR¹⁵²CONR¹⁵³R¹⁵⁴, -NR¹⁵⁵CO₂R¹⁵⁶ -COR¹⁵⁷, -NR¹⁵⁸COR¹⁵⁹ and -NR¹⁶⁰SO₂R¹⁶¹, and R¹⁴¹, R¹⁴², R¹⁴³, R¹⁴⁴, R¹⁴⁵, R¹⁴⁶, R¹⁴⁷, R¹⁴⁸, R¹⁴⁹, R¹⁵⁰, R¹⁵¹, R¹⁵², R¹⁵³, R¹⁵⁴, R¹⁵⁵, R¹⁵⁶, R¹⁵⁷, R¹⁵⁸, R¹⁵⁹, R¹⁶⁰ and R¹⁶¹ each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-2) R²⁰³ represents a C₁₋₁₀ substituted alkyl group; wherein in the formulae (2-3a) and (2-3b), a R²⁰⁴, R²⁰⁵, R²⁰⁶ and R²⁰⁷ each represents independently a cyano or a group having no more than C₁₀₀ selected from the group consisting of an aliphatic group, aromatic group, heterocyclic group, -OR²¹¹, -SR²¹², -CO₂R²¹³, -OCOR²¹⁴, -NR²¹⁵R²¹⁶, -CONR²¹⁷R²¹⁸, -SO₂R²¹⁹, -SO₂NR²²⁰R²²¹, -NR²²²CONR²²³R²²⁴, -NR²²⁵CO₂R²²⁶ -COR²²⁷, -NR²²⁸COR²²⁹ and -NR²³⁰SO₂R²³¹, and R²¹¹, R²¹², R²¹³, R²¹⁴, R²¹⁵, R²¹⁶, R²¹⁷, R²¹⁸, R²¹⁹, R²²⁰, R²²¹, R²²², R²²³, R²²⁴, R²²⁵, R²²⁶, R²²⁷, R²²⁸, R²²⁹, R²³⁰ and R²³¹ each represents independently a hydrogen atom, aliphatic group or aromatic group; wherein in the formula (2-4) at least one of R¹, R², R³, R⁴, R⁵, R⁶, R⁷ and R⁸ has substituent groups represented by -NR²⁷¹SO₂R²⁷², two or more substituent groups represented by -NR²⁷¹SO₂R²⁷² are contained in the ~~dye~~, [molecule,] and R²⁷¹ and R²⁷² each represents independently a hydrogen atom, aliphatic group or aromatic group; and wherein in the formula (2-5) at least one of R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R⁸ has one or more water-soluble groups.